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ABSTRACT

This study examined the cumulative grade point averages of collegiate student-athletes at Fort Hays State University (Kansas) as related to the variables of gender, academic classification, type of sport participation, and transfer status. The measure used as dependent variable was mean cumulative grade point average which consisted of the number of total quality points earned divided by the number of credit hours attempted. The population for the study was the entire population of eligible student-athletes at Fort Hays, 256 students of whom 188 were male (72 percent) and 68 were female (27 percent). Research procedures included gathering cumulative grade point averages and other data through the university computer center and statistical data analysis. Results indicated a statistically significant interaction between gender and transfer status with nontransfer students. In addition female athletes had higher academic achievement than male athletes; student-athletes participating in non-revenue sports had higher academic achievement than student-athletes participating in revenue sports; and native (non-transfer) student-athletes had higher academic achievement than non-native (transfer) student-athletes. Included are 4 tables, 1 figure, and 20 references. (JB)

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# ACADEMIC ACHIEVEMENT OF STUDENT-ATHLETES

being

A Thesis Presented to the Graduate Faculty
of the Fort Hays State University in
Partial Fulfillment of the Requirements for
the Degree of Master of Science

by

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Abstract

The purpose of the researcher was to investigate the cumulative grade point averages of student-athletes. The independent variables investigated were gender, academic classification, type of sport participation, and transfer status. The dependent variable was cumulative grade point average. A total of 4 composite null hypotheses were tested. Each composite null hypothesis was tested at the .05 level employing a three-way analysis of variance.

Eleven comparisons plus 13 recurring were made. Of 11 comparisons 4 were main effects and 7 were interactions. Of the 4 main effects 3 were statistically significant at the .05 level. Of the 7 interactions 1 was statistically significant at the .05 level. The statistically significant interaction was between the independent variables gender and transfer status.

The results of the present study appeared to support the following generalizations:

1. female athletes had higher academic achievement than male athletes,
2. student-athletes participating in non-revenue sports had higher academic achievement than student-athletes participating in revenue sports,
3. native student-athletes had higher academic achievement than non-native student-athletes,

4. there was no association found between classification of student-athletes and cumulative grade point average,
5. no association between type of sport participation of student-athletes, and
6. gender and transfer status interacted.

# Introduction

## Overview

There is a need for successful intercollegiate athletic programs in terms of the revenue, prestige, and national focus they can produce for a university. There is, also, a growing concern for the academic achievement of the student-athletes involved in these programs. Some people outside athletics have the opinion that for student-athletes, athletics often moves academic importance aside. Lageman (1984, p. 1) wrote the following comments:

> The term student-athlete describes an individual whose education is combined with intercollegiate athletic participation. The sequence of the words, however, may not accurately reflect the respective emphasis placed on each in the student-athlete's life. At various university environments, athletics is the focal point and academics is a secondary priority. Often this emphasis is forced upon student-athletes by overzealous coaches, administrators, and supporters. This can be documented by numerous violations involving the altering of academic transcripts and the issuing of unearned credit. On the other hand, other student-athletes intentionally exploit the educational system by using it as a stepping stone to a professional

athletic career.

Athletes seemingly have a growing stigma attached to them as they pursue their collegiate careers. Some in society label student-athletes as not having the capacity to be successful students. Cox (1987, p. 22) stated, "The nation has classified and stereotyped the individuals not as student-athletes, but as `dumb jocks.' There is a widespread sentiment among many publics that athletes do not belong in the academic setting."

Other researchers support this contention. A report (Wittmer, Bostic, Phillips, & Waters, 1981, p. 54) on the development of a unique counseling program for student-athletes commented that:

> The dumb jock has now come into full flower in the American educational system. He is fast becoming a national catastrophe. He is already a national disgrace. About the only good thing one can say about him is that his blossoming has inadvertently exposed the larger failures of the educational process.

Reports place the responsibility for student-athlete academic failure on the institutions of higher education. Eitzen (1987) maintained that critics of intercollegiate sport have argued that winning and revenues corrupt higher education. More specifically, at some schools, the athletes' athletic performance is more important than their

academic achievement. Even worse, the athletes were exploited for their commercial value and when they were used up, discarded without the education they were promised.

However, others in society take a more positive look into the academic life of student athletes. Cady (1978) maintained that society has been prejudiced in the notion that athletic endeavor has damaged the academic achievement of the athlete. Real academic achievement has been hard to judge and no study has shown that the athlete has been mentally or academically inferior to his or her nonathletic peers.

Research results (Cady, 1978; Bend, 1968; Coakley, 1990) indicate that numerically athletes did better in grade point average than nonathletes and there was very little difference in the college grade point average of the two groups. The slight difference noticed was in favor of the athlete. They suggested that virtually all studies record that proportionally more student-athletes survived academically and achieved degrees than their non-athletic classmates. This, in part, may be explained by the motivation to stay and play.

Many potential student-athletes are ill prepared for higher education. What at times has taken place in this academic system was that any coach could get an athlete who had met substandard requirements in academics to

participate in intercollegiate athletics. Syndicated columnist George Will (cited in Wittmer, Bostic, Phillips & Waters, 1981, p. 52) called this, "fertile ground," for college coaches.

> What happened? Why is it different after all these years? Is it different because the educational system is in chaos, its spirit preoccupied, its standards blunted to a point where almost anything that passes for curriculum is permissible. High schools-many of them-have such meager academic requirements that they are fertile ground for any angling coach who feels the need to do some academic cheating to keep his players eligible. The sins of the high schools and J.C.'s are visited on the major colleges and other universities, where the buck stops.

Academic Preparation of Student-Athletes for College

Data have shown the individual student-athlete has suffered from an educational system that has not prepared him or her well for institutions of higher learning. Their training through the educational system has left a number of student-athletes with inadequate skills necessary for academic success in college.

A study (Kirshenbaum, 1983) at Iowa State University revealed academically ill prepared athletes involved in a remedial program. In one of these classes, 26 of the 28

football players enrolled read at the 10th grade level or below and three of them read at less than the 4th grade level.

Becker, Wieberg & Farrell (cited in Eitzen, 1987) in their 1986 survey of all but two of the Division IA and IAA NCAA schools found that 350 football players (10.6 percent) were ineligible to compete as freshman because of the newly implemented proposition 48 [at least a 2.0 cumulative grade point average (G.P.A.)] in a core high school curriculum and a minimum of 700 on the SAT or 15 (18 on new enhanced ACT) on the ACT. It was estimated that about 13 percent of the incoming basketball players were ineligible under these rules.

Research results (Stuart, 1985) indicated that freshman scholarship football players at Iowa State between 1977 and 1980 were matched randomly with male nonathletes. The nonathletes were significantly better prepared for college on high school rank, high school G.P.A., semester of high school math, and ACT scores.

The problem of collegiate athletes not having the skills for achieving academic success at postsecondary institutions is not new. At Michigan State between 1950 and 1974, some 50 percent of male scholarship athletes were admitted with special consideration compared to only 3 to 4 percent of the student body (Shapiro, 1984).

Another study (Klingbeil, 1967) found that in a

comparison of mean high school rank showed the athletes to be slightly higher than the non-athletes in all colleges except the College of Education. Klingbeil (1967) also discovered that at the University of Florida, the mean ACT scores for all athletes and the all freshman group indicated little difference existed between the two groups.

Grade Point Average and University Comparisons

One of the most commonly used indicators of academic performance has been the G.P.A. Some studies (Purdy, Eitzen, and Hufnagel, 1985) and Eitzen and Purdy, 1986; and Vance, 1983 (cited in Eitzen, 1987) found that those who participate in revenue sports have a lower G.P.A. Eitzen and Purdy (1986) found at Colorado State University between 1970 - 1979 the total cumulative G.P.A. for athletes was 2.56 compared to 2.74 for nonathletes and Virginia Tech reported that 68 percent of its scholarship athletes had G.P.A.s of less than 2.0. Findings at Tulane University (Purdy, Eitzen, and Hufnagel, 1985) further reinforced what others reported with student-athletes having had a cumulative G.P.A. of 2.30 compared to 2.73 for the nonathlete population.

However, other studies have found that athletes compared favorably with nonathletes. Researchers (Eidsmore, 1963; Klingbeil, 1967; Schafer & Armer, 1968) found that the more athletes participated in sports, the better their G.P.A. compared with nonathletes. Student-

athletes at one major university had a fall G.P.A. of 2.40 and a spring G.P.A. of 2.38, while nonathlete students had a 2.33 G.P.A. and a 2.41 G.P.A. for the same time periods. Also, 56.6 percent of the student-athletes matched numbered with nonathletes, had a higher mean G.P.A.

Type of Participation

Another concern focused on the quality of education athletes received once they entered school. One group of athletes was consistently mentioned in studies regarding academic failure, who were consistently unsuccessful in attaining a college degree. These student-athletes competed in "big time" or revenue sports. A review of research indicated that male scholarship athletes who participated in men's football and basketball have not performed as well academically as their athletic counterparts and nonathletes.

Eitzen (1987, p. 19) concluded that,

> although the findings of student-athletes are sometimes contradictory and the studies uneven methodologically, there are some generalizations that can be made with certainty.
>
> 1. Male athletes in the revenue sports of football and basketball perform less well academically than other athletes on the same measure.
>
> 2. The higher the level of competition (Division I vs. Divisions II and III), the less likely

the athletes will compare favorably with nonathletes.

3. Black student-athletes who are concentrated in the high pressure revenue sports, are least prepared of all categories academically, they receive the lowest grades in college and are the least likely of the athlete subgroups to graduate.

Supporting this claim was a study (Eitzen & Purdy, 1986; cited in Eitzen, 1987) of the academic performance of college student-athletes at Tulane University for a four-year period. In this study, the cumulative G.P.A. for revenue athletes was 1.93 compared to non-revenue athletes of 2.55.

In another study (Purdy, Eitzen, & Hufnagel, 1982; cited in Eitzen, 1987) at Colorado State University found that athletes participating in football had a cumulative G.P.A. of 2.30 and basketball players acquired a cumulative G.P.A. of 2.43. However, student-athletes involved in nonrevenue sports cited acquired the following cumulative G.P.A.s: baseball 2.52, wrestling 2.52, track 2.67, softball 2.73, gymnastics 2.76, tennis 2.77, and volleyball 2.95.

Gender

As emphasis on women's athletics has grown, so has the importance of having measured female student-athletes' academic success. Their success has been evident when compared with their male counterparts. Eitzen (1987, p.

21) in his study of student athletes expressed this comparison:

> Female athletes, at present are clearly better prepared for college and perform better academically than their male counterparts. Women athletes are indistinguishable from the rest of the student body academically while male athletes are significantly lower than the general student population in preparation for college and academic achievement during their college years.

A study (cited in Lederman, 1984) by the National Collegiate Athletic Association found that 78 percent of the Division I female basketball players surveyed earned grade-point averages of B or better in high school compared to 55 percent of the male players. Also, of the 42 Division I schools surveyed, female basketball players achieved a 2.64 grade-point average, and other female scholarship athletes averaged 2.67 in college. Their male counterparts earned a 2.44 grade-point average in college.

A study (Eitzen 1987) at Tulane University further supported the NCAA study. It was discovered that all male athletes had a cumulative G.P.A. of 2.23 compared to all female athletes with a cumulative G.P.A. of 2.61.

In another study (Purdy, Eitzen, & Hufnagel, 1985) at Colorado State University, the G.P.A. of athletes over a 10-year period indicated that all male athletes had a

cumulative G.P.A. of 2.48 compared to all female athletes with a cumulative G.P.A. of 2.88.

Transfer Students

Student-athletes who transferred from one post-secondary institution to another seemed to have a disadvantage academically. Cox (1987) concluded that transfer students were less successful than native students in retention rates, grade point averages, and graduating with honors. The results of the study showed that 20% of transfer students had grade point averages below 2.00, compared to 12.5% for the native students who had grade point averages below 2.00. Thirty-eight percent of the native students had grade point averages of over 3.00 compared to 22% for transfer students. Thirty-six of 256 native students graduated with honors, while 3 of 35 transfer students graduated with honors. While 11.8% of the population were transfers, 33.6% of them did not graduate, while 28% of native student-athletes did not graduate.

Academic Classification

Underwood (1980) maintained that often the student-athlete has taken classes based on maintaining eligibility, rather than on a structural program throughout their four-year collegiate career aimed at graduation. Low minimum grade point averages re-evaluated in past studies have been a result of this exploitation. Underwood (1980) explained:

> From the moment the student-athlete sets foot on campus, the name of the game is "majoring in eligibility," and it is a vulgar, callous, shameful, cynical--and perfectly legal--exploitation of the system by and for the American college athlete. The formal term for it is "normal progress toward a degree." But the NCAA's definition of "progress" won't be found in any dictionary; for one thing "progress" in the student-athlete lexicon can mean no progress at all. (p. 43)

A review of research on the "progress" of academic success through each of the classifications during a student-athlete's four-year collegiate career has shown a negative effect. A study (Purdy, 1987) at the University of Illinois discovered that of the 227 Black scholarship athletes at Illinois, 96% fell below a 2.0 G.P.A. by their sophomore year and 65% failed to graduate. An examination of their transcripts indicated that the eligibility criterion was of higher priority than a planned program for graduation. In addition, a study at North Texas State University by Harrison (cited in Jacobs, 1983) revealed a similar situation. Of the 234 football players on scholarship over a six-year period, less than 20% eventually graduated and two-thirds had sophomore G.P.A.s of less than 2.0.

Research at Fort Hays State (Strecker, 1964) invites the possibility that the higher academic classification of members of the basketball squad could have contributed to the significant difference in cumulative grade point average that existed between the football and basketball squads.

Collegiate sports clearly are a major intervening variable in the development of the student-athlete. There are substantial differences by sample. This research will add additional information to the knowledge of academic achievement of student-athletes from various sports.

## Statement of Problem

The purpose of the researcher was to investigate the mean cumulative grade point averages of student-athletes.

## Importance of the Research

The results of this study could be used by coaches, professors, counselors, and administrators as a reference for helping student-athletes. By reviewing these findings, athletic departments and university faculty could be more alert to those groups of athletes who required academic assistance.

The results will provide suggestions for the following issues and concerns:

1. Is there an association between gender of student-athletes and mean cumulative grade point average?
2. Is there an association between academic

classification of student-athletes and mean cumulative grade point average?

3. Is there an association between type of sport participation of student-athletes and mean cumulative grade point average?

4. Is there an association between transfer status of student athletes and mean cumulative grade point average?

Composite Null Hypotheses

All hypotheses were tested at the .05 level of significance.

1. The differences among the mean cumulative grade point averages of athletes according to gender, academic classification, and type of sport participation (revenue vs non-revenue) will not be statistically significant.

2. The differences among the mean cumulative grade point averages of athletes according to type of sport participation, transfer status, and academic classification will not be statistically significant.

3. The differences among the mean cumulative grade point averages of athletes according to gender, academic classification, and transfer status will not be statistically significant.

4. The differences among the mean cumulative grade point averages of athletes according to gender, transfer status, and type of sport participation will not be

statistically significant.

## Definition of Variables

Independent Variables - 4 variables

Gender - 2 levels

level 1 - Females, and

level 2 - Males;

Academic Classification - 4 levels

level 1 - Freshman,

level 2 - Sophomore,

level 3 - Junior, and

level 4 - Senior.

Transfer Status - 2 levels

level 1 - Native (non-transfer student);

level 2 - Non-native (transfer student);

Type of Sport Participation - 2 levels

level 1 - Non-revenue Sports,

level 2 - Revenue Sports.

Dependent Variable - 1 variable

Academic Achievement depicted by cumulative grade point average

## Limitations

The following conditions might have affected the results of the present study:

1. All subjects were from the same mid-sized university,
2. An athlete may have appeared on two or more athletic teams if he or she were listed as eligible to participate

in the respective sports,

3. Some sports had smaller numbers of student-athletes compared to the larger participation sports,

4. The sample was not random,

5. Some instructors may have had a negative attitude toward athletes, possibly making the college courses more difficult for the athletes, and

6. Some of the instructors may have been pro-athletic and may have been more lenient toward athletes.

## Methodology

### Setting

The subjects for this study were all selected from the Fort Hays State University athletic programs. Fort Hays State University, located in northwest Kansas, had a total enrollment of 4,973 during the spring semester of the 1989-90 school year. Fort Hays State University is a state, tax-assisted liberal and applied arts university. Fort Hays State University is a regional university serving western Kansas and dedicated to providing instruction within a computerized environment.

### Subjects

The entire population of eligible student-athletes of Fort Hays State University was studied. Of that population, 256 were listed as eligible to participate in varsity athletics. Of that group 188 or 72% were male athletes and 68 or 27% were female athletes.

The following groups of athletes were employed: those participating in the male sports of varsity football, basketball, baseball, track, cross country, and wrestling, those who participated in the female sports of varsity basketball, volleyball, gymnastics, track, and cross country, and those who participated in the revenue sports (football and men's basketball) and non-revenue sports. The sample consisted of 68 freshmen, 64 sophomores, 56 juniors, and 68 seniors.

All 256 eligible student-athletes were chosen to represent the subjects in this study. The male subjects consisted of 17 cross country athletes, 13 wrestling athletes, 8 golf athletes, 41 track athletes, 19 baseball athletes, 14 basketball athletes, and 76 football athletes. The female subjects consisted of 13 basketball athletes, 12 volleyball athletes, 10 gymnastic athletes, 9 cross country athletes, and 24 track athletes.

Instruments

The measure used as the dependent variable was mean cumulative grade point average (G.P.A.). This value consisted of the number of total quality points earned divided by the number of credit hours attempted.

Design

A status survey design was employed. The groups were student-athletes who participated in varsity athletics at Fort Hays State University. The independent variables

investigated were gender, academic classification, type of sport participation, and transfer status. The dependent variable was cumulative grade point average.

Four composite null hypotheses were tested. The following design was used with each:

composite null hypothesis number 1, a
2 x 4 x 2 factorial design,
composite null hypothesis number 2, a
2 x 2 x 4 factorial design,
composite null hypothesis number 3, a
2 x 4 x 2 factorial design, and
composite null hypothesis number 4, a
2 x 2 x 2 factorial design

McMillian and Schumacher (1989) cited 10 threats to internal validity. These threats were dealt with in the following ways in the present study:

1. history - did not pertain because the present study was status survey,
2. selection - all available subjects were employed,
3. statistical regression - did not pertain because there were no extreme subjects,
4. testing - did not pertain because the present study was status survey,
5. instrumentation - did not pertain because the present study was status survey,
6. mortality - did not pertain because the present study

was status survey,

7. maturation - did not pertain because the present study was status survey,

8. diffusion of treatment - did not pertain because the present study was status survey,

9. experimenter bias - did not pertain because the present study was status survey, and

10. statistical conclusion - two mathematical assumptions were violated, (random sampling and equal distribution in cells): a general linear model was employed to correct for lack of equal numbers in cells and the researcher did not project beyond the statistical procedures employed.

McMillian and Schumacher (1989) identified two threats to external validity. These threats were dealt with in the following ways in the present study:

1. population external validity - the sample was not random; therefore, the results should be generalized only to groups similar to the sample, and

2. ecological validity - no treatment was provided and the data were compiled by people other than the researcher.

Data Collecting Procedures

The college cumulative grade point averages of all student-athletes were collected in order to determine the academic achievement of each subject. Through a computer search at the university's computer center, the researcher

obtained the grade point averages of all completed course work from individual college transcripts which were kept on file by the Office of the Registrar. Social Security numbers were matched from eligibility lists obtained by the researcher from the Fort Hays State University Athletic Department. With the confidentiality of such records, the researcher contacted the Vice-President of Student Affairs, Dr. Jim Dawson and was granted permission to obtain copies of complete academic transcripts from the Office of the Registrar.

Research Procedures

The following steps were implemented:

1. the researcher interviewed various coaches associated with the Fort Hays State Athletic Department who expressed their opinions on student athletes,
2. the researcher conducted a computer search of related literature at the Fort Hays State University library and Tabor College library,
3. the researcher conducted a microfiche search of related literature at the Tabor College library,
4. the researcher requested various inter-library book and document loans from universities and colleges around the state of Kansas,
5. the researcher then reviewed all literature dealing with student-athletes,
6. the researcher narrowed the focus on the academic

achievement of student-athletes,

7. other factors involved during athletic participation at the collegiate level were also considered,

8. based upon those findings a research proposal was written, presented, and defended before a thesis committee,

9. data were collected,

10. data were analyzed by the Fort Hays State University Computing Center,

11. the final document was written, and

12. editing of final document was completed.

Data Analysis

The following were compiled:

1. appropriate descriptive statistics,

2. three-way analysis of variance (general linear model),

3. Bonferroni (Dunn) *t*-test for means, and

4. Duncan's multiple test for means.

## Results

The purpose of the researcher was to investigate the cumulative grade point averages of student-athletes. The independent variables investigated were gender, academic classification, type of sport participation, and transfer status. The dependent variable was cumulative grade point average. A total of 4 composite null hypotheses were tested. Each composite null hypothesis was tested at the .05 level employing a three-way analysis of variance. The following design was used with each composite null

hypothesis: composite null hypothesis number 1, a 2 x 4 x 2 factorial design, composite null hypothesis number 2, a 2 x 2 x 4 factorial design, composite null hypothesis number 3, a 2 x 4 x 2 factorial design, and composite null hypothesis number 4, a 2 x 2 x 2 factorial design. The results section was organized according to composite null hypotheses for ease of reference. Information pertaining to each composite null hypothesis was presented in a common format for ease of comparison.

It was hypothesized in composite null hypothesis number 1 that the differences among the mean cumulative grade point averages of student athletes according to gender, academic classification, and type of sport participation would not be statistically significant.

Information pertaining to composite null hypothesis number 1 was presented in Table 1. The following were cited in Table 1: variables, sample sizes, means, standard deviations, $F$ values, and $p$ values.

Table 1

A Comparison of Mean Cumulative Grade Point Averages According to Gender, Academic Classification, and Type of Sport Participation Employing a Three-way Analysis of Variance.

| Variable | n | M* | SD | F value | p levels |
|---|---|---|---|---|---|
| Gender (A) | | | | | |
| Female | 68 | 3.0[a] | 0.56 | 11.17 | .001 |
| Male | 188 | 2.6[b] | 0.58 | | |
| Academic Classification (B) | | | | | |
| Freshmen | 67 | 2.7 | 0.70 | | |
| Sophomore | 64 | 2.8 | 0.62 | 0.23 | .8728 |
| Junior | 59 | 2.8 | 0.50 | | |
| Senior | 66 | 2.7 | 0.55 | | |
| Type of Sport Participation (C) | | | | | |
| Revenue | 90 | 2.6 | 0.59 | 3.68 | .0562 |
| Non-Revenue | 166 | 2.8 | 0.58 | | |
| Interactions | | | | | |
| A x B | | | | 0.35 | .7910 |
| A x C | | | | * | * |
| B x C | | | | 0.37 | .7741 |
| A x B x C | | | | ** | ** |

* Based upon a 4.00 = A
**Insufficient data for Analysis
[ab] Difference statistically significant at the .05 level according to Bonferonni (Dunn) t-tests for means.

One of the 7 p values was statistically significant at the .05 level; therefore, the null hypothesis for this comparison was rejected. The significant comparison was for the main effect gender. The results cited in Table 1 indicated females had a significantly higher mean cumulative grade point average than males.

It was hypothesized in composite null hypothesis number 2 that the differences among the mean cumulative grade point averages of athletes according to type of sport participation, transfer status, and academic classification would not be statistically significant.

Information pertaining to composite null hypothesis number 2 was presented in Table 2. The following were cited in Table. 2: variables, sample sizes, means, standard deviations, F values, and p levels.

Table 2

A Comparison of Mean Cumulative Grade Point Averages According To Type of Sport Participation, Transfer Status, and Academic Classification Employing a Three-way Analysis of Variance.

| Variable | n | M* | S | F value | p levels |
|---|---|---|---|---|---|
| Type of Sport Participation (C) | | | | | |
| Revenue | 90 | 2.6[a] | 0.59 | 6.61 | .0107 |
| Non-revenue | 166 | 2.8[b] | 0.58 | | |
| Transfer Status (D) | | | | | |
| Native | 179 | 2.8[a] | 0.62 | 4.54 | .0342 |
| Non-native | 77 | 2.6[b] | 0.53 | | |
| Academic Classification (B) | | | | | |
| Freshmen | 67 | 2.7 | 0.70 | | |
| Sophomore | 64 | 2.8 | 0.62 | 1.15 | .3297 |
| Junior | 59 | 2.8 | 0.50 | | |
| Senior | 66 | 2.7 | 0.55 | | |
| Interactions | | | | | |
| B x C | | | | 0.27 | .8470 |
| B x D | | | | 0.42 | .6601 |
| C x D | | | | 0.09 | .7600 |
| B x C x D | | | | 0.69 | .5034 |

* Based upon 4.00 = A

[ab] Difference statistically significant at the .05 level according to Bonferroni (Dunn) t-tests for means.

Two of the 7 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. The significant comparisons were for the main effects type of sport participation and transfer status. The results cited in Table 2 indicated that students participating in non-revenue sports had a significantly higher cumulative grade point average than those participating in revenue sports and native students had a significantly higher cumulative grade point average than non-native students.

It was hypothesized in composite null hypothesis number 3 that the differences among the mean cumulative grade point averages of athletes according to gender, academic classification, and transfer status would not be statistically significant.

Information pertaining to composite null hypothesis number 3 was presented in Table 3. The following were cited in Table 3: variables, sample sizes, means, standard deviations, F values, and p values.

Table 3

A Comparison of Mean Cumulative Grade Point Averages According to Gender, Academic Classification, and Transfer Status Employing a Three way Analysis of Variance.

| Variable | n | M* | S | F value | p levels |
|---|---|---|---|---|---|
| Gender (A) | | | | | |
| Female | 68 | 3.0[a] | 0.56 | 17.46 | .0001 |
| Male | 188 | 2.6[b] | 0.58 | | |
| Academic Classification (B) | | | | | |
| Freshmen | 67 | 2.7 | 0.70 | | |
| Sophomore | 64 | 2.8 | 0.62 | 0.48 | .6948 |
| Junior | 59 | 2.8 | 0.50 | | |
| Senior | 66 | 2.7 | 0.55 | | |
| Transfer Status (D) | | | | | |
| Native | 179* | 2.8 | 0.62 | 0.00 | .9873 |
| Non-native | 77* | 2.6 | 0.53 | | |
| Interactions | | | | | |
| A x B | | | | 1.73 | .1619 |
| A x D | | | | 4.41 | .0367 |
| B x D | | | | 1.25 | .2888 |
| A x B x D | | | | 0.36 | .5497 |

* Based upon 4.00 = A

[ab] Difference Statistically significant at .05 level according to Bonferroni (Dunn) t-test for means.